

1 This listing of claims replaces all prior versions and listings:
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3 **Listing of Claims:**
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5 1. (currently amended) A computer program product encoding a
6 computer program for executing on a computer system a computer process for
7 simulating performance of a software system including one or more resources, the
8 computer process comprising:

9 generating one or more workload definition sequences defining the
10 software system, each workload definition sequence including a plurality of
11 workload request nodes and each of the workload request nodes defining one or
12 more component events, the workload definition sequence including at least two
13 of the workload request nodes having a sequential relationship relative to different
14 simulation intervals;

15 receiving the one or more workload definition ~~sequence~~ sequences into an
16 evaluation engine; and

17 evaluating the one or more workload definition sequences to simulate the
18 performance of the software system, the evaluating operation comprising:

19 selecting, according to a run-time policy and for at least one of the
20 component events, one of a plurality of hardware model instances associated with
21 one of the one or more resources included in the software system.
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23 2. (currently amended) The computer program product of claim 1
24 wherein each request node is defined independently of any of a specific the
25 hardware model ~~instance~~ instances.

1 3. (currently amended) The computer program product of claim 1
2 wherein each workload request node defines a transaction associated with a
3 ~~resource~~ one of the one or more resources included in the software system.

4 4. (canceled)

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6 5. (original) The computer program product of claim 1 wherein the one
7 or more workload sequences are generated prior to the receiving and evaluating
8 operations and substantially define all workload request nodes for simulating
9 performance of the software system.

10 6. (currently amended) The computer program product of claim 1
11 wherein each workload request node defines a device option characterizing
12 constraints on how the workload request node may be assigned to a ~~resource~~ one
13 of the one or more resources included in the software system.

14
15 7. (original) The computer program product of claim 1 wherein at least
16 one workload sequence includes a fork node defining a split of one workload
17 sequence branch into a plurality of workload sequence branches.

18 8. (original) The computer program product of claim 1 wherein at least
19 one workload sequence includes a join node defining a combination of a plurality
20 of workload sequence branches into a single workload sequence branch.

21
22 9. (original) The computer program product of claim 1 wherein the
23 computer process further comprises:

24 receiving at least one of a monitoring trace, statistical data, and a workload
25 specification to generate the one or more workload definition sequences.

1 **10.** (currently amended) The computer program product of claim [[1]]
2 9 wherein the operation of receiving at least one of a monitoring trace, statistical
3 data, and a workload specification comprises:

4 receiving the monitoring trace defining a sequence of software system
5 requests relating to an application request associated with the application.

6 **11.** (currently amended) The computer program product of claim [[1]]
7 9 wherein the operation of receiving at least one of a monitoring trace, statistical
8 data, and a workload specification comprises:

9 receiving the statistical data defining a statistical distribution of one or
10 more application requests associated with the application.

11 **12.** (currently amended) The computer program product of claim [[1]]
12 9 wherein the operation of receiving at least one of a monitoring trace, statistical
13 data, and a workload specification comprises:

14 receiving the workload specification defining a set of resource request
15 descriptions associated with the software system.

16 **13.** (currently amended) The computer program product of claim 1
17 wherein each workload definition sequence comprises a start node associated with
18 a start time, and the ~~simulating~~ evaluating operation comprises:

19 activating at least one of the workload definition sequences, if the start time
20 associated with the start node of the workload definition sequence satisfies the
21 simulation interval value.
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1 14. (currently amended) The computer program product of claim 1
2 wherein ~~the simulation operation comprises:~~

3 ~~translating at least one of the workload request nodes into~~ said one or more
4 component events are recorded in an event queue.

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6 15. (canceled)

7 16. (canceled)

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9 17. (currently amended) The computer program product of claim 14
10 where the evaluating operation further comprises:

11 ~~receiving, prior to the selecting operation,~~ one of the component events
12 from the event queue;

13 ~~identifying, prior to the selecting operation,~~ a resource of the one or more
14 resources included in the software system associated with the component event;
15 and

16 ~~scheduling the component event with an instance of a hardware model~~
17 ~~associated with the resource in the software system; and~~

18 ~~simulating, after the selecting operation,~~ the component event received
19 from the event queue using the ~~instance of the hardware model~~ selected one of the
20 plurality of hardware model instances.

1 **18.** (currently amended) A performance simulation system for
2 simulating performance of a software system, the performance simulation system
3 comprising:

4 a workload generator generating one or more workload definition
5 sequences defining the software system, each workload definition sequence
6 including a plurality of workload request nodes and each of the workload request
7 nodes defining one or more component events, the workload definition sequence
8 including at least two of the workload request nodes having a sequential
9 relationship relative to different simulation intervals; and

10 an evaluation engine receiving the one or more workload simulation
11 sequences and evaluating the one or more workload definition sequences including
12 by scheduling, according to a run-time policy and for at least one of the
13 component events, one of a plurality of hardware model instances each
14 representing a resource included in the software system to simulate the
15 performance of the software system.

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17 **19.** (currently amended) The performance simulation system of claim
18 18 wherein each workload request node defines a transaction associated with a
19 ~~resource~~ one of the resources included in the software system.

20 **20.** (canceled)

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22 **21.** (original) The performance simulation system of claim 18 wherein
23 each workload request node defines a device option characterizing constraints on
24 how the workload request node may be assigned to a resource in the software
25 system.

1 **22.** (original) The performance simulation system of claim 18 wherein
2 at least one workload sequence includes a fork node defining a split of one
3 workload sequence branch into a plurality of workload sequence branches.

4 **23.** (original) The performance simulation system of claim 18 wherein
5 at least one workload sequence includes a join node defining a combination of a
6 plurality of workload sequence branches into a single workload sequence branch.

7 **24.** (original) The performance simulation system of claim 18 wherein
8 each workload definition sequence comprises a start node associated with a start
9 time, and the evaluation engine comprises:
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11 a simulation clock incrementing a simulation interval value; and

12 an activator activating one of the workload definition sequences, if the start
13 time associated with the start node of the workload definition sequence satisfies
14 the simulation interval value.

15 **25.** (currently amended) The performance simulation system of claim
16 18 wherein the evaluation engine comprises a sequence processor translating at
17 ~~least one of~~ each of the workload request nodes into their defined one or more
18 component events.

19 **26.** (original) The performance simulation system of claim 25 wherein
20 the evaluation engine comprises:
21

22 an event queue receiving the component events from the sequence
23 processor.
24
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1 27. (currently amended) The performance simulation system of claim
2 25 wherein the evaluation engine further comprises a scheduler module that
3 performs the scheduling operation and is capable of scheduling all of the
4 component events with hardware model instances that each represent assigning
5 ~~each component event to an instance of a hardware model representing~~ a resource
6 in the software system.

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8 28. (canceled)

9 29. (currently amended) The performance simulation system of claim
10 18 wherein the evaluation engine comprises a simulator determining a duration of
11 a component event ~~assigning to an instance of a hardware model~~ scheduled for one
12 of the plurality of hardware model instances.

1 **30.** (currently amended) A method of simulating performance of a
2 software system including one or more resources, the method comprising:
3 generating one or more workload definition sequences defining the
4 software system, each workload definition sequence including a plurality of
5 workload request nodes and each of the workload request nodes defining one or
6 more component events, the workload definition sequence including at least two
7 of the workload request nodes having a sequential relationship relative to different
8 simulation intervals;
9 receiving the one or more workload definition ~~sequence~~ sequences into an
10 evaluation engine; and
11 evaluating the one or more workload definition sequences to simulate the
12 performance of the software system, the evaluating operation comprising:
13 selecting, according to a run-time policy and for at least one of the
14 component events, one of a plurality of hardware model instances associated with
15 one of the one or more resources included in the software system.
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17 **31.** (currently amended) The method of claim 30 wherein each request
18 node is defined independently of any of ~~a specific the~~ hardware model ~~instance~~
19 instances.

20 **32.** (currently amended) The method of claim 30 wherein each
21 workload request node defines a transaction associated with ~~a resource~~ one of the
22 one or more resources included in the software system.
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24 **33.** (canceled)
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1 **34.** (original) The method of claim 30 wherein the one or more
2 workload sequences are generated prior to the receiving and evaluating operations
3 and substantially define all workload request nodes for simulating performance of
4 the software system.

5 **35.** (currently amended) The method of claim 30 wherein each
6 workload definition sequence comprises a start node associated with a start time,
7 and the ~~simulating~~ evaluating operation comprises:

8 activating at least one of the workload definition sequences, if the start time
9 associated with the start node of the workload definition sequence satisfies the
10 simulation interval value.

11 **36.** (currently amended) The method of claim 30 wherein the
12 ~~simulation operation comprises:~~

13 ~~translating at least one of the workload request nodes into~~ said one or more
14 component events are recorded in an event queue.

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16 **37.** (canceled)

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18 **38.** (canceled)

1 **39.** (currently amended) The method of claim 36 where the evaluating
2 operation further comprises:

3 receiving, prior to the selecting operation, one of the component events
4 from the event queue;

5 identifying, prior to the selecting operation, a resource of the one or more
6 resources included in the software system associated with the component event;

7 and

8 ~~scheduling the component event with an instance of a hardware model~~
9 ~~associated with the resource in the software system; and~~

10 simulating, after the selecting operation, the component event received
11 from the event queue using the ~~instance of the hardware model~~ selected one of the
12 plurality of hardware model instances.

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14 **40.** (new) The computer program product of claim 1 wherein the run-
15 time policy comprises a scheduling policy indicating which of the plurality of
16 hardware model instances to select for said at least one of the component events
17 based on which resource associated with a hardware model instance will first be
18 free.

19 **41.** (new) The computer program product of claim 1 wherein the
20 selecting operation is based on a current load of each of said one or more
21 resources included in the software system.
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